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ABSTRACT

The chronicle provides information on programs and offers articles of interest to gifted students and educators. Among entries are the following: "Myths about the Gifted" (which presents research relative to myths and negative attitudes regarding the gifted); "Four Faces of Creativity" (about a model for expanding and clarifying the nature of creativity) by D. Keating; "Art Education for the Gifted" (on screening and identifying artistic talent) by R. Saunders; "TAPS (Tips for Artistically Precocious Students"; "Providing and Supporting an Academically-Based Gifted Program" by L. Moran and B. Wright; a list of suggestions for increasing student motivation; and other relevant announcements. (SW)

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CHRONICLE OF ACADEMIC AND ARTISTIC PRECOCITY

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CHRONICLE ENDS 1ST YEAR OF PUBLICATION

This special double issue of the *Chronicle of Academic and Artistic Precocity* marks the end of our first year of publication. It has been the staff's editorial policy to keep our readership up-to-date and informed about the Project for the Study of Academic Precocity's (PSAP) educational and research activities, make you aware of key events in the field of education of the gifted both in Arizona and across the country, and to present articles of interest both to the highly sophisticated educational professional and the layperson.

Over the past year, we have published articles about new legislative developments in the education of the gifted (e.g., "New Arizona Law," Vol. 1, No. 3, p. 6), announcements of special educational events geared to professionals and laypeople alike (e.g., "Announcing a Training Conference," Vol. 1, No. 1, p. 8; "New PSAP Chapter for AAGT," Vol. 1, No. 4, p. 8), and descriptions of our own and other programs across the country designed to meet the educational needs of Talent Search participants (e.g., 'PSAP: Its First Two-and-a-Half Years," Vol. 1, No. 1, p. 1; "CTY 1982: A Real Eye Opener," Vol. 1, No. 4, p. 4). In a less technical vein, we have published several biographies of famous gifted individuals (e.g., "Wolfgang Amadeus Mozart," Vol. 1, No. 2, p. 6) and our ever popular "Puzzle of the Month." This special 16 page edition of the Chronicle offers us an opportunity to bring you several important articles which are too long for publication in our regular eight page format.

Having completed a year's apprenticeship under Dr. Sanford Cohn, Director of PSAP and Assistant Professor specializing in the area of the education for the gifted in the Department of Special Education at Arizona State University (ASU), Craig Blurton, a third year doctoral student in the Department of Elementary Education specializing in science education and the gifted and a PSAP Project Associate, will take over the editorship of the *Chronicle* beginning with this issue. Dr. Cohn will keep an active hand in the publication of the *Chronicle* contributing, we hope, many articles over the course of the next year. Jadis Ullman, a Master's candidate studying under Dr. Cohn and specializing in the education of the gifted in the Department of Special Education at ASU and a PSAP Project Associate, will take over the duties of Associate Editor.

It is our sincere wish to continue to bring you, the readers and supporters of the *Chronicle* and of the educational and research goals of PSAP, timely and relevant information over the course of our second year of publication.

Craig Blurton
Editor
PSAP Project Associate

ANNOUNCING 2ND ANNUAL PSAP TRAINING CONFERENCE

The Project for the Study of Academic Precocity (PSAP) will conduct its Second Annual Training Conference concerning the Provision of Appropriate Academic Services for Intellectually Gifted Students February 16 - 19, 1983, at Arizona State University. The conference is designed to offer teams of administrators and implementors detailed, research-based information about identification, program development, and program evaluation.

Dr. Sanford J. Cohn, Training Conference Director, notes:

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MYTHS ABOUT THE GIFTED

In our last issue (Vol. 1, No. 4), we reprinted a survey entitled "Are You Stereotypic?" which was developed by the staff of the Study of Mathematically Precocious Youth (SMPY) at Johns Hopkins University and originally appeared in SMPY's *Intellectually Talented Youth Bulletin (ITYB)* in February of 1977 (Vol. 3, No. 6). The survey has been used both at Johns Hopkins University by Dr. Lynn Fox and Arizona State University by Dr. Sanford J. Cohn in introductory courses about education for the gifted to assess the attitudes of graduate students. We have reprinted the correct answers in this issue of the *Chronicle* on page 16 .

This article, drawing upon information from articles which appeared in the *ITYB*[1], will discuss research which has debunked some of the myths and negative attitudes held by many about highly able youngsters.

In his monumental study begun in 1921 of 1528 intellectually gifted youths, Lewis M. Terman demonstrated that gifted youths manifest considerable precocity in their physical as well as their intellectual development rather than being physically and psychologically immature compared to their age-mates as is widely believed. Even though Terman cautioned that the sample of gifted children was small, the data nevertheless showed a definite trend that these youngsters complete pubescense at a faster pace than do children in the general population, with girls showing a slightly more accelerated development than boys (Terman, 1925, p. 207). Evidence of this trend was also reported in the SMPY study of five precocious junior high school aged boys who attended a summer course in college algebra and trigonometry. Not only did all of the boys achieve "A's" in this course, but also the " . . . quality of remarks made in class by these young students demonstrated their keen insight into the subject matter" (Keating, Weigand, & Fox, 1974, p. 108). When the teacher of the course was told of the five SMPY sponsored youngsters in her class, she was able to identify only two of them. When she was asked to identify the students in the class with the greatest mathematical aptitude, however, she named four of the five SMPY boys.

In the singular context of social maturation, Terman asserted that ". . . the gifted child of nine years has reached a level of character development corresponding roughly to that of unselected children of 14 years" (Terman, 1925, p. 516). In his doctoral dissertation Daniel Keating, Associate Professor in the Institute of Child Development at the University of Minnesota and a former staff member of SMPY, demonstrated that brightness as measured by psychometric instruments implies developmental precocity in reasoning ability (Keating, 1976, p. 97). Inasmuch as social behavior is learned, such precocity in reasoning ability is very likely to generalize to learning in a social context as well as in an academic one. In discussing a group of 71 accelerated seventh, eighth, and ninth graders participating in the SMPY program, Haier and Denham stated that "as a group these mathematically precocious youth are interpersonally effective and socially mature . . . " (Haier & Denham, 1976, p. 239).

Dr. Julian C. Stanley, Director of SMPY and Professor of Psychology at Johns Hopkins University, has summarized the issue of "peerage" as follows—

> Part of the problem is in the minds of those skeptics who atutomatically assume that one's social and emotional peers are one's age-mates. Performance of gifted youngsters, including ours, on such personality measures as the California Psychological Inventory

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Myths, cont'd. from p. 1

> shows that emotionally they are more like bright persons several years older than themselves than they are like their own age-mates. There is considerable variability, of course, but on the average they are better matched socially and emotionally with able students who are older[2]. Thus, just as their intellectual peers are not their age-mates, their social and emotional peers aren't either. For clarity of discourse, it would seem wise not to use the word "peer" in this type of argument without prefacing it with one or more modifiers. (Stanley, 1976, p. 237)

Although Terman's study involved no direct intervention in the educational process of the youngsters participating in his study, it did provide evidence to debunk another popular myth about highly able youngsters, i.e., educational acceleration leads to social maladjustment. A large number of his subjects were accelerated academically: 68% of the boys skipped on the average 1.4 grades and 73% of the girls skipped on the average 1.2 grades (Terman, 1925, p. 579). Among his 1528 subjects were 16 boys and 12 girls who had been accelerated three years or more by the end of high school. When case studies of each of these youths were cited, 14 of the 16 boys and all 12 of the girls were rated either superior or average on "social adaptability" (Terman, 1925, pp. 615-619).

As members of the Terman group were followed over the years the boys who had been accelerated showed a greater tendency to become high-level professionals and businesspeople (Terman & Oden, 1947, p. 271). In her 40-year follow-up study of the Terman group, Oden described the grouping of men according to levels of vocational achievement. "The most successful ('A' group) ranked at the top, while the least successful ('C' group) ranked at the bottom of the vocational ladder for the Terman men as a whole" (Oden, 1968, pp. 52-53).

> The A's were younger at receiving their degrees, earned better grades, won more honors, and more often held positions of leadership in college activities . . . Ratings made on 13 traits of personality by parents, the wives (if married), and the subjects themselves in 1940 when the men averaged close to age 30 brought out significant differences in personality between the A and C groups. The traits in which they differed most were self-confidence, perseverance, and integration towards goals . . . The A's also suffered less from feelings of inferiority than the C's . . . The subjects as adults were rated by field workers on 12 characteristics at two follow-up dates: 10 years and 20 years (1940 and 1950 respectively) before their selection for the A and C groups. The ratings all favored the A group. Especially notable were the significantly higher ratings for the A's in appearance, attractiveness, poise, attentiveness, curiosity, and originality. (Oden, 1968, p. 91)

Both Terman and Oden concluded that acceleration was particularly desirable in the cases of youngsters who were headed toward professional careers (Terman & Oden, 1959, p. 72; Oden, 1968, p. 10).

In the studies of early entrants to college sponsored by the Ford Foundation, Pressey was quoted as stating " . . . over the past 30 years a considerable number of carefully controlled studies taking account not simply of academic success but also of health and social adjustment have almost all been favorable in outcome to selective acceleration" (Ford Foundation, 1953,p. 13; Pressey, 1949). With reference to the SMPY early entrants to college, Keating commented that these talented youths, far from being maladaptive, are "well equipped to successfully encounter life" (Keating, 1976, p. 240). All indications seem to point conversely to the harm that is done in holding these youths back in the traditional lock-step educational process (Terman, 1925, p. 636 and p. 639).

That educators experience attitudes toward the gifted imbued with prejudice and negative stereotypes has been documented recently (Solano, 1977; Cohn, 1977). Solano found that both gifted boys and gifted girls faced negative attitudes from educators who were unfamiliar with them and, interestingly enough, that familiarity lessened educators negative attitudes towards gifted boys but heightened them towards gifted girls (Solano, 1977, pp. 6-8). Cohn also found " . . . educators by-and-large experience a negative stereotype of gifted students [but that] many of them are eager to learn about these youngsters and are quick to apply what they learn to their own work situations" (Cohn, 1977, p. 26).

With the availability of positive evidence regarding the characteristics of gifted children like that cited in this article, how do we account for the prevalence of prejudice and negative stereotypical attitudes? Negative evidence is most often anecdotal, of the kind: "I once knew a person who . . . " (George, 1977). In addition, failed prodigiousness is often widely advertised as in the case of William James Sidis who was a student at Harvard when only eleven years old and who " . . . attracted national attention in 1910 by delivering a lecture on higher mathematics before the Harvard Mathematics Club" (Montour, 1977, p. 265). After being continuously pressured and exploited by his domineering father, Sidis eventually rejected all intellectual endeavor and died an obscure clerk. This tragedy was monitored in the *New Yorker* Magazine in a "Whatever happened to . . . " article and has been often cited by those wishing to discredit acceleration as a viable educational alternative in spite of the profound and voluminous evidence in favor of its use. Thus, the isolated individual incident related anecdotally tends to perpetuate the negative attitudes and stereotypes held by many professional educators and laypeople about gifted and talented students, but empirical evidence strongly refutes such widely held views.

[1]Myth #1: Intellectually gifted youths are physically and psychologically less mature than their age-mates, *ITYB* (Intellectually Talented Youth Bulletin). Vol. 3, No. 7 (March 1977), p. 2; Myth #2: Educational acceleration leads to the social maladjustment of intellectually talented youths, *ITYB*, Vol. 3, No. 10 (Summer 1977), pp. 10-11.

[2]Our experience with such youngsters during the Project for the Study of Academic Precocity's residential summer program over the past two years indicates that their peer group, as would be expected, also includes age-mates of similar high intellectual ability. In the normal school situation such youngsters are rare and only a few may be in any given school but, during the residential program at Arizona State University, highly talented youngsters were able, in many cases for the first time, to associate with children of similar ages and abilities resulting in many lasting friendships and comments like: "At last, I have a friend I can talk to who understands what I mean" and "I used to think I was the smartest kid around until I came here."

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FOUR FACES OF CREATIVITY:

The Continuing Plight of the Intellectually Underserved[1]

Daniel P. Keating, Ph.D.[2]

Despite much recent attention to the topic of "gifted" children, the vast majority of highly academically able children and youth are poorly served by the present educational system. Although there are exceptions, a number of which have been documented in this journal and elsewhere, it remains true that these students are not, by and large, receiving the kind of education best suited to their needs.

The Problem

Why is this so? One would think that the cumulative effect of over 50 years of attention, effort, and research devoted to this topic would have been a massive change in the orientation of the educational establishment, and a concomitant change in practice. Although economic considerations have frequently been cited as a major obstacle to the initiation of adequate educational opportunities for this large group of students, the evidence points towards attitudinal factors as the primary source of difficulty.

The most compelling evidence that economics is a secondary rationalization rather than a primary cause is the failure of schools to vigorously pursue cost-free (or nearly so) alternatives for these children, such as acceleration through grade-skipping, subject-matter acceleration, early entrance, advanced placement, and so on. Opposition to these administrative remedies is almost by definition based on opinion and attitudes, because the findings from well-designed research studies are unanimous in their support of the benefits of accelerative alternatives, both academically and socio-emotionally (George, Cohn, & Stanley, 1979; Stanley, Keating & Fox, 1974; Keating, 1976).

The second kind of evidence that attitudinal factors are the major obstacle to progress is that even modest expenditures for programs for highly able children are implicitly (sometimes, explicitly) among the lowest priorities for school systems. The argument that schools would very much like to do something for this group but just cannot afford it really means that such help has lower priority than all the other things on which schools do spend money. A simple listing of all expenditures for most school districts would be quite revealing in terms of what priority, in deed rather than in word, is placed on developing an adequate educational program for the academically able.

Let us for the moment then accept the thesis that the major problem in establishing useful programs for these children is not economic but rather attitudinal. What are the attitudes creating the greatest hindrance, and are they in any way malleable? Others have analyzed this issue previously (e.g., Bereiter, 1976), and a number of societal attitudes have been frequently cited as running counter to the development of effective programs (e.g., anti-intellectualism, egalitarianism, conformity). Rather than reiterate those analyses, I will focus on two areas which are more directly under the control of educators and researchers associated with attempts to improve education for these children. A more critical way of stating the same thing is that these are areas that I believe we have collectively misconstrued and have consequently generated poor or borderline programs as well as unconvincing arguments to the general public. By clarifying our arguments and assumptions, and by offering solid research evidence when available, we will have a better opportunity of informing public opinion accurately and gathering reasoned support for desired educational alternatives. The two areas I focus on here are creativity and the working conception of academic ability.

Four Faces of Creativity

Historically, the scientific study of creativity in this country is usually dated from Guilford's (1950) presidential address to the American Psychological Association. In that address, he challenged investigators to understand one of the major species characteristics of humankind, creativity. He went on to offer a suggestion that an important unanalyzed component was divergent thinking, the activity of the mind when there is no set solution, and perhaps not even a well-defined problem. This is, of course, contrasted with convergent thinking, or more traditional problem solving. Torrance (1977) and others picked up the gauntlet, and during the 1950's and 1960's an impressive amount of research was generated on creativity and creative thinking, or more specifically on divergent thinking. A number of educational programs were developed and used which had as their goal the fostering of "creative thinking".

In the rush to pursue this area of research, some unreflective inferences were drawn regarding the primacy of the cognitive skill called divergent thinking. It came to be identified as equivalent in all respects to creativity itself. It seems crucial to pause and ask whether or not that is indeed all we mean by creativity, or even all that we include among the cognitive components of creativity. By creativity here I mean socially relevant creativity in the sense that the individual's creative act is meaningful in the short or long run to society and not only to him/herself. Clearly the acquisition of a complex syntax is astoundingly creative for the toddler, but by this definition it is not creativity because it is derived from rather than contributing toward the society's storehouse of knowledge and experience.

In this light, divergent thinking is seen as but one component, albeit a crucial one, in the creative act. A number of other components are, however, equally crucial. One sensible division of these components follows. Other analyses are of course possible and equally valid, but I propose this one because the educational implications are the most straight-forward. The components are listed here in a vaguely temporal sequence, although this is not essential to the argument.

1. *Content knowledge.* Since this component has served as the "straw man" for arguments that divergent or creative thinking offers a better conception of the creative process, it needs some rehabilitation. Logic of course argues for its necessity to the creative act, and accumulated experience supports the logical inference. Unless one has a thorough working knowledge of the current status of a discipline or art form, it is virtually impossible to advance beyond the status quo, that is to be creative in the strict sense. The progression in science is often more visible than elsewhere, with innovators "standing on the shoulders" of predecessors. Kuhn (1970) argued convincingly that major paradigm shifts are more meaningful markers in the history of science than the slow accumulation of "ordinary science." But, by the same token, it is the accumulation of ordinary science that displays the seams of the existing paradigm and makes shifts necessary and possible. Such trends are often less visible outside the scientific realm, but Shakespeare without Sophocles or O'Neill without Aeschylus is nearly as unthinkable as Einstein without Newton.

These simplified arguments are not meant to downplay significant, unresolved issues in the history of philosophy, science, literature, or art. The point is simply that deep and thorough familiarity with the work of one's predecessors in any field is, if not an absolute prerequisite, at least a virtually universal concomitant of creative breakthroughs. The denigration of intensive study within any field as rote learning or fact memorization fails to recognize the crucial point that one must master a field before one can surpass it.

This is not meant as a defense of the methods sometimes used in standard curricula to convey content, but rather to emphasize that its importance is equal to divergent thinking. Curricula and teachers are capable of making any content either dull or exciting, and of course we would always prefer the latter. Too often, however, the seeming drudgery of drill, practice, homework, and hard work are seen as inimical to learning and/or creativity, making it less fun, when in fact the effects of rehearsal are among the few stable findings in all the learning literature.

The Study of Mathematically Precocious Youth (SMPY) project by Stanley and his colleagues (Stanley, Keating & Fox, 1974; Keating, 1976; Stanley, George, & Solano, 1977, 1978) has focused on the rapid acquisition of content knowledge since its inception. The working premise is that students who are academically able to work at level L + 1 or L + 2 or L + n should not, for the lack of programs or administrative initiative, be left to languish indefinitely at level L. Working rapidly through the content of a specific discipline is seen as helpful rather than harmful to the creative prospects of the learners for several reasons. First, it provides them with this first component at an early enough age to explore beyond it during their intellectual prime (Horn, 1976). Second, the absence of boredom and frustration from years of level L stagnation permits the retention of excitement and initiative. In sum, the focus on the content of a discipline and the acquisition of that content is a priori as much oriented toward creativity as is a program whose focus is on divergent thinking.

2. *Divergent thinking.* As noted above, this area has been more closely identified with creativity than any other. In order to make creative advances, it is of course necessary to master the content of a given field, but it is also necessary to avoid being forever bound by the current understanding within the field (Kuhn, 1970). Being flexible and ideationally fluent is an important antidote to excessive reliance on contemporary wisdom, and this was and is the conception underlying much of the research effort in this area.

Critical evaluations of these research efforts have concentrated on two areas, the measurements of creative thinking (especially discriminant and predicitve validity) and the effects of intervention programs on creativity. Wallach (1970) thoroughly reviewed the literature to that date, and Torrance's (1977) review contains some crucial follow up

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Four Faces, cont'd. from p. 3

data.[3]

The most significant stumbling block has been the inability to empirically demonstrate variance on creative thinking which at the same time is adequately discriminable from standard intelligence and achievement test variance and predictive of criteria of real-world creativity. Wallach's)1970) conclusion was that creative thinking tests generally intercorrelated no better than their average correlation with standard intelligence tests. The only component of the creative thinking measures reliably discriminable from intelligence test variance was pure ideational fluency, the total number of different ideas an individual could produce in a specified time.

Torrance's (1977) follow-up date tend on the whole to reinforce this inference. Subjects selected as extreme scorers (high and low) on creative thinking tests in high school were asked to report on their creative achievements twelve years later (N = 52). Despite the built-in advantage of selecting on the creativity measures, the correlations of these measures with three criteria of postschool creativity are not much higher than standard intelligence on achievement measures (F = .53 vs. F = .44). If the groups had been selected on the latter measures, the likelihood is that they would have worked as well or better in predicting the real-world creativity criteria used in this study.

What are the educational implications of these research findings? First, most programs which focus on excellent educational achievement in the traditional sense, while maintaining learner interest, would presumably touch upon nearly all the components typically subsumed under the creative thinking label, since the developmental and individual variance in the various measures appear non-discriminable in terms of both concurrent measurement and long-range predictive ability.

Second, the only discriminable component seems to be ideational fluency, which by itself is of dubious educational value. Interventions aimed toward increasing fluency per se may in fact be somewhat counter-productive if they implicitly or explicitly convey the impression to students that the rapid, unfettered, uncritical production of ideas is as valuable in itself as the acquisition of knowledge or the critical analysis of ideas.

Two criteria regarding "creative thinking" interventions may be inferred from this analysis. The first is that the promotion of ideational fluency in the absence of solid content acquisition is of unknown worth, and may be more harmful than helpful. The second is that labeling this activity creativity, thus singling out for special attention what is just one component of creativity, may be inappropriate if it leads students and educators to regard it as more deserving of attention than the other, apparently more mundane components.

Programs which employ the limited notion of creativity and ignore these criteria are likely to be, and often are, ephemeral and diversionary. They may concentrate on the 1% inspiration and ignore the 99% perspiration in creative production. When this occurs, responsible educators begin to look askance at all programs claiming to benefit the gifted or creative student. Programs which propose non-substantive solutions to clearly substantive problems deserve such skepticism.

In sum, the evidence shows that the prominence given to "creative thinking" is undeserved, and that it is properly regarded as only one of several important components in creative activity. Furthermore, programs designed to foster it in isolation are of dubious value, and may well lead to decreasing support for programs for high-ability students within the educational community. They should be undertaken only in conjunction with solid content-oriented programming, and the relative importance of ideational fluency vis a vis other components of creativity should be recognized.

3. *Critical analysis.* This, unfortunately, has not been an area often identified with creativity. Indeed, it has frequently been seen as occupying an opposite end of the dimension of intellectual activity in that its major goal is the "cutting-up" of creative productions rather than contributing toward production. Hence its role in creative activity requires clarification.

Let us return briefly to our hypothetical temporal sequence. The individual has acquired sufficient familiarity with a field to be at its frontier. Being ideationally fluent, the individual has generated a large number of possible avenues for solving or conceptualizing a problem in a new way. What next? Certainly, the simultaneous pursuit of all those avenues is almost never possible, and thus there must be some judgements made so that highly promising ideas may be separated from unpromising ones. This is of course the source of creative tension, avoiding on the one hand the useless exertion of intellectual effort on ideas which hold no promise, but on the other hand avoiding the discarding of ideas which may seem preposterous at first blush but in fact hold the seeds of a major advance.

Critical analysis has an undeserved reputation as the tough heel on the fragile throat of creativity. Good critical analysis serves exactly the opposite function. To switch metaphors, it selectively removes useless weeds so that the flower of creativity has room and energy to prosper. For some reason we have seemed to assume that this essential tension would occur by concentrating only on fluency and brainstorming, as if solid critical skills would be a natural, unplanned result of the existing educational system. Judging only on the basis of hundreds of undergraduate term papers, I find defense of that assumption difficult in the extreme. Widespread reports of consumers' gullibility in the face of advertising claims and the almost equally frequent belief in para-psychological phenomena in the absence of solid, painstakingly examined evidence are other anecdotal supports for doubting this assumption.

To my knowledge, there have been no extensive, evaluated programs for high-ability children with critical skills as their primary goal. Good models exist, of course, in the form of college-level courses in logic, rhetoric, philosophical analysis, scientific methodology, and so on. In fact, to the extent that such experiences raise students' skeptical awareness, they may have as strong an influence on ideational fluency as do programs intended to foster that directly. If students are well-trained to examine all conveyed knowledge critically, they are more likely to consider a variety of alternatives, even improbable ones. It is instead the student untrained in critical analysis who is more likely to accept on face value claims of wisdom or truth, however unfounded.

Such critical skills may be taught in isolation or incorporated into content-oriented programs. The intellectual challenge of such learning is likely to appeal to high-ability students, and one hopes the establishment and evaluation of such programs will be forthcoming.

4. *Communication skills.* An idea or artistic conception which exists only in the head of the potential creator, but never escapes, cannot be considered creative in the strict sense. Something must be made, produced, concretized in some fashion before it has a chance to succeed in contributing to the collective human experience. Whatever the creative production, it requires, by our definition, the communication of the idea or concept. Although communication is really the mirror image of critical analysis, that is, being a competent sender as well as a thoughtful receiver, it deserves separate mention on two counts. First, it is the culmination of the creative act. Second, it is an area with important educational implications.

The literature on the development of communication skills is extensive, and there has been considerable attention paid to it in programs for high-ability students. Programs focusing on creative writing are ubiquitous, although less attention has typically been given to expository writing. It is included here primarily to emphasize that the imperative to communicate is one that should be paramount in any successful programs for high-ability students.

Summary

A model for expanding and clarifying the nature of creativity was proposed. It has four components in a vaguely temporal sequence: 1) the individual must have thorough familiarity with the accumulated base of knowledge and experience in whatever field he/she is working; 2) the individual must not be so rigidly tied to that knowledge base that new conceptualizations are blocked, that is, he/she should entertain and generate new ideas easily; 3) the individual must have adequate critical skills to separate promising from unpromising avenues, since not all ideas can be pursued simultaneously; 4) the individual must have adequate communication skills, so there is a production to be evaluated in a social context - that is, outside the individual.

Much of the effort in developing "creativity" has concentrated to date on the second component, even though it is clearly no more important than the others and despite the fact that programs focusing more or less exclusively on that aspect of the creative process are likely to lack substance and definition. When these ephemeral and diversionary programs are seen by the educational community at large as characteristic of efforts on behalf of high-ability students, the predictable effect is declining support for such efforts. The obvious way to counter this unfortunate trend is first to recognize the importance of content learning and critical and communication skills acquisition, and second to design programs for high-ability students which reflect that recognition. In practice, strong programs aimed at any of these three components will probably have greater credibility than "creative thinking" interventions, and may well aid the student more in developing his/her full potential, creative or otherwise.

Connotations of Academic Ability

A common experience of professionals in gifted child education is to be asked, "What IQ is the cut-off for the gifted? What is the difference between bright, very bright, and gifted?" Such questions clearly reflect

an unsophisticated understanding of the nature and development of ability (Horn, 1976), but more importantly they reflect the unnecessary and frequently harmful connotative baggage that burdens the term "gifted" and indeed the whole field of gifted-child education.

Either by omission or commission, we have allowed these unnecessary perjorative connotations to continue, and they have led to much of the underlying negative reaction to programs for high-ability students. Here I will highlight four common misconceptions about high academic ability which have special educational implications.

1. *Absolute vs. relative definitions.* Probably the most common misconception in this regard is the assumption that there exists somewhere a realistic definition of "giftedness" such that some people have it and others do not. Using such an absolute definition, so this logic goes, we should discover how to identify the possessors of this quality of giftedness, and then seek to work with these individuals in the way that best helps them. By this set of assumptions, our task would be much easier if there were perhaps a physical mark of some kind (maybe a "g" in the small of the back?) which would alleviate difficulties of identification.

This is of course facetious, but only partly so. Educationally speaking, the important components of "giftedness" are those defined relative to the school in which the individual student finds him/herself. I have argued elsewhere (Keating, 1979) that much of the confusion in what we are doing in gifted-child education results from a failure to keep rational goals in the forefront. A major goal of gifted-child education should be to provide novel, challenging, and educationally relevant material to all students, regardless of ability, on a reasonably regular basis. For academically bright students, this of course means special programming of one kind or another. The amount and kind of special programming, however, will depend on the kind of education available on a standard basis, that is, without special programming.

The question then ought not to be primarily what the criterion is for some abstract notion of gifted, but rather what is the degree to which a given individual student is intellectually underserved by the standard educational offering. In fact, for educational purposes, it might be more advantageous to define the target of our efforts as the "intellectually underserved" rather than as the "gifted". Consider two students from different schools, both of whom score at about the 90th percentile on tests of mathematical aptitude and achievement. Student A goes to a school where the average student scores at about the 85th percentile on those tests; student B goes to a school where the average score is about the 30th percentile. B will almost certainly be intellectually underserved by the standard in-grade offering in his school, whereas A is likely to be getting material at just about the right pace and level of complexity. B is intellectually underserved, A is not. But by any rational use of terms, they are equally gifted or bright. Educational programming must reflect a recognition of this interaction of learner characteristics and available instruction.

There will always be a sizable number of children, of course, who are intellectually underserved by any standard curriculum. Stanley and his SMPY colleagues have found many such students, and they will nearly always require special programming. But another advantage of the notion of the intellectually underserved is that it tends to define the solution much more straight-forwardly, i.e., find the level which serves them adequately. For most academic areas, at least through high school, there exist reliable means of assessing the aptitude and achievement level of the student. Having done so, the solution is simply to arrange in any of a myriad of ways for that student to receive instruction at the next appropriate level. We need not wring our hands and wonder what to do for the gifted (or the intellectually underserved), but rather use the assessment tools and curricula we already have in abundance to eliminate the discrepancy between what they are being taught (level L) and what they are ready to learn (level L + 1, . . ., L + n).

2. *The burden of innate superiority.* From the very beginning, the gifted-child education movement has been closely identified in the public eye with notions of genetic superiority, eugenics, an hereditary elite, and so on. In that context, proposals for special efforts on behalf of gifted students is likely to be as popular as welfare subsistence for the Rockefellers, Vanderbilts, and Kennedys. If they already have everything, why strain the public trough to give them even more?

Clearing up all the misunderstandings on this issue is obviously impossible at this point, but several observations are appropriate on the role of gifted-child education in this controversy. The first is that the typical layperson's conception of the nature of genetic transmission of behavioral tendencies is simplistic in the extreme. The reality, of course, is that the models and evidence are quite complex, and on many crucial points there is little consensus among experts (Loehlin, Lindzey, & Spuhler, 1975).

It should be recognized, however, that accounts and explanations of the origins of high intellectual or academic ability are for the most part irrelevant to problems of practical planning educationally. Consider the possibilities. If ability were in fact 100% under genetic control, then environmental alterations within the normal range are meaningless anyway. This is the most unlikely possibility, however. Almost certainly, abilities are the result of gene-environment interactions. For educational programming, the relative proportions of each are essentially irrelevant; whatever the proportion of environmental influence, it represents the full leverage that educational intervention can have. Our goal should be to design the best possible interventions, since firm knowledge of the behavior genetics involved would not alter the success of those interventions in either direction.

For purposes of public discussion and rational values, it is also crucial to keep firmly in mind the realization that ability or intelligence is but one of a significant number of socially relevant behavioral characteristics. Traits such as energy level (drive), temperament, social competence, and so on are as or more important than mental ability to any definition of success in the society and high ability clearly does not guarantee superior stature on these traits. Notions of "superiority" based on any one human characteristic are extremely foolhardy.

3. *Developmental emergence of ability.* A corollary of the innate superiority assumption is what we may call the indelibility assumption, which holds that if a child is gifted, it will be clearly evident and expressed as soon as reliable measurement is possible. Working on this assumption, one might reasonably propose the identification of the gifted population at an early age, say first or second grade, which would be followed by special interventions for that identified group through their school career. Those not identified, of course, would be ineligible indefinitely.

No evidence supports such an assumption, and no reasonable theory of human ability, genetic or environmental, requires it. Although the correlation of age 6 or 7 years IQ with age 17 years IQ is approximately +.7 (Bloom, 1964), this does not mean that there can not be individual differences in the developmental emergence of ability. A useful way of viewing this is that less than one-half of the adult-ability variance is accounted for by primary-grade IQ scores. In addition, developmental data strongly suggest that different patterns of ability emergence are present in longitudinal studies (McCall, Applebaum, & Hogarty, 1973).

The educational inference is thus quite clear. The selection of students for special programs should be a recurring activity, not a one-shot affair. Multiple entry, exit, and re-entry points should be available, and are far preferable to fixed selection for a several-year (or longer) period.

4. *General intelligence vs. specific abilities.* Despite a consensus within the psychometric community that "g" does not offer the fullest or most useful account of the development and nature of ability (Horn, 1976), many if not most gifted education programs still employ the IQ or other composite score as the sole or major selection criterion. This is unfortunate, since the educational implications of high IQ are not specific enough to offer much help in practical programming (Keating, 1975). Because of the nature of composite scores, selection on them normally produces a group which is not much less heterogenous in any given subject area than an unselected sample.

The six-fold division of areas (general intelligence, specific academic aptitudes, creativity, social/leadership, artistic, and psychomotor), which has been common in the field for some time, harbors some unfortunate biases which appear to give equal priority to areas which are of demonstrably different importance to the educational facilitation of high-ability children. The vast majority of effort within schools, as measured by time or amount of curriculum or in other ways, is undeniably devoted to academic learning. Consequently, the most underserved, and hence bored and frustrated students, are those with high intellectual and academic ability. Since academics constitute the part of schooling universally required, our highest priority should be to improve the poor educational options for students underserved in these areas. As argued above, the focus on general intelligence is inadequate to address this problem. Creativity, as defined in most cases, should be a minor priority as a separate topic, but instead should be incorporated into substantive educational programs (see above). Only through a united effort with a focus on students who are especially able in specific academic areas, and who are selected for solid programs on the basis of those abilities, are we likely to have much of an impact on the continuing plight of the intellectually underserved.

Proposals

Based on the above review and analysis, I would argue for the following proposals as the most effective means for working toward the highest priority goals in the area of gifted education.

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Four Faces, cont'd. from p. 5

1. We should disavow clearly non-substantive or diversionary programs which claim to benefit the gifted but actually do not. The temptation is naturally to applaud any efforts on behalf of these students, using as a rationalization to justify poorly conceived programs the belief that any beginning is better than none. I believe instead that they are more often counterproductive, generating skepticism and lack of support among key groups inside and outside the educational community.

2. To distinguish among programs for the gifted, we should welcome, and even insist upon, rigorous evaluations with clearly defined achievement criteria. Solidly conceived and executed programs will show clear positive effects, and on this basis efforts on behalf of the intellectually underserved can continue and expand.

3. We should consider the full range of educational alternatives, whether they are called enrichment or acceleration or something else. Teachers are sometimes urged to find something to do with these students, as long as it does not involve moving ahead in a core area and impinging upon next year's curriculum. Such recommendations are pedagogically unethical. The educational priorities are or ought to be primary; administrative convenience is a priority far down on the list.

4. Whenever possible, we should clarify misconceptions about the nature of ability and abandon unnecessary assumptions. Many issues interesting and important as research topics are irrelevant in terms of educational planning at the present.

5. The educational responsibilities toward the intellectually underserved should be asserted on a firm, rational basis. At a minimum, explanations for assigning a low priority to this problem when that situation exists, should be required from school officials. The arbitrary definition of such programs as luxury items in the school budget rather than necessities should be cogently contested. Advocates will be in a better position to make those arguments if they have theoretically practically defensible alternatives available.

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[3]Research into other aspects of creativity is extensive, including life history motivation, and affective and personality factors. For reasons of space these will not be dealt with here, but obviously they also are important to a full understanding of creativity.

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ART EDUCATION FOR THE GIFTED[1]

Screening and Identifying the Talented in Art

Robert J. Saunders[2]

The increasingly significant interest in the gifted and talented in the arts makes the needs for identifying them more essential. This is true whether or not special programs for them are being funded by governmental or local sources, or being accommodated through adaptations to the total school program. If they are being funded by federal or state monies, such identification, with definite procedures for doing so, is required.

Federal and State funding guidelines establish the standards, but leave the responsibility for screening and identifying to the applicant. For instance, the Connecticut State Department of Education (1978) defines, "outstanding talent in the creative arts," as:

> that talent possessed by the top five percent of the students in a school district who have been chosen by the special education planning and placement team on the basis of demonstrated or potential achievement in music, the visual arts or the performing arts.

The guidelines further define criteria for screening and identification which apply to both academically gifted and artistically talented.

> Screening and identification criteria should be based on a study of all available evidence as to the pupil's ability and/or potential by personnel qualified to administer and interpret:
> -appropriate standardized tests
> -judge demonstrated ability, potential, intelligence, creativity, and leadership
> -recognize outstanding talent in the creative arts.

Even when a G/T program is not being specifically funded, a definite procedure for screening and identifying artistically talented children should be established. The three factors: standardized tests, demonstrated ability, and recognized outstanding talent are the basis of most screening and identifying procedures. This article will deal with each of them as they apply to art, using examples from programs for the gifted and talented in the arts in Connecticut.

However, before establishing a screening and identifying procedure, it helps to have a philosophy or point of view about creativity and working with the artistically gifted and talented. The first part of the article will deal with some traditional points of view about creativity and working with the artistically gifted and talented. It is outside of our purpose, however, to provide a detailed background or philosophy. A brief historical perspective by Alexander (1981) serves that purpose for those who are interested.

Art teachers should become familiar with the major literature in the G/T field, especially that used by the general G/T staff; G/T staff should become familiar with literature in creativity and the gifted and talented in art education especially that used by local art teachers. Such shared knowledge provides for a workable exchange of ideas.

Attitudes About Artistic Talent and Creativity

Traditionally, the student who could "draw better than anyone else in the class" was considered talented in art. It is very easy to recognize talent in correct picture making and accurate linear perspective. But, this tradition was joepardized in 1947 by Lowenfeld's *Creative and Mental Growth*, (Lowenfeld & Brittain, 1975), which described two orientations to drawing and painting, 1) the visual and 2) the haptic or non-visual. The visually minded individual responds to the world through visual stimuli with a removed, objective point of view. The haptically minded individual responds to the world through tactile, sensory stimuli and an empathetic, subjective, feeling point of view. The drawings of the visual individuals are usually correct in proportion and spatial representation. The haptically minded individuals tend to draw proportions and spatial relationships with subjective proportions; that is, the haptics tend to draw large those things important to them, and to draw smaller or to omit those parts which are less important. Haptics may have particular difficulty with linear perspective because it is a mathematical visual concept. In a context where visual representation is the criteria, haptic children may be considered untalented because of their non-visual orientation when drawing or painting.

Visual/haptic differences are not a dichotomy, but are at two ends of a continuum. The majority of individuals are in between, with some degree of both visual and haptic orientations to their world. In spite of this distinction, good visual representation remains a valid criterion, but an artistically gifted student may use both visual and haptic elements in a work of art to an exceptional degree.

Although representation remains a valid criterion, there is more than that to recognizing artistic talent. For instance, Beittel and Burkhart (1963) discovered and identified three modes of drawing and painting, the spontaneous, deliberate, and academic. The spontaneous approach emphasizes action over thinking, and students using this approach are essentially solving problems of delineating forms and shapes. In drawing from a still life, spontaneous students will draw one area, then another, then may rework the first to better fit into the whole. Their line may be sketchy or vague and rely on suggestion for expression. The divergent approach emphasizes thinking over action, and is more deliberate in execution. Divergent students draw or paint a particular area to its completion and move to another area, but do not really rework or change an area once it is done.

Beittel and Burkhart found that these two different drawing strategies were both creative, but that the academic approach was not. The spontaneous and deliberate approaches have aspects of openendedness, while the academic strategy is close-ended. In drawing from a still life, both the spontaneously and divergently oriented students left the still life as a reference and began developing their paintings into their own expressive statements. The academically minded students always kept the still life as a reference to make a correct representation.

Criteria for creativity in art does not differ greatly from the criteria for most educational creativity as described by Gowan (1972), Guilford (1967), Taylor (1962), and others. Indeed, between 1950 and 1955, while Guilford was conducting his research at University of Southern California, with engineering and science students using verbal tests, Lowenfeld was conducting studies in a doctoral program at Pennsylvania State University using non-verbal art tests. Neither knew of the other's work until around 1954 when in comparing results they realized they had discovered the same criteria although with slight variations.

Both sets of criteria, taken from accounts by Lowenfeld (posthumously, 1962) and Guilford (1959), as published by Parnes and Harding (1962, 12-13; 156-159), is outlined below in a parallel format to show their similarity.

Criteria for Creativity Compared

	Lowenfeld		Guilford
1.	Sensitivity to Problems	1.	Sensitivity to Problems
2.	Fluency	2.	Fluency Word Fluency Ideational Fluency Associational Fluency Associational Fluency Expressional Fluency
3.	Flexibility	3.	Flexibility Spontaneous Flexibility Adaptive Flexibility
4.	Originality	4.	Originality
5.	Ability to Redefine and Rearrange	5.	Redefinition Symbolic Redefinition Figural Redefinition
6.	Analysis	6-7.	Guilford observes that neither analysis nor synthesis are unitary abilities. They operate in degree according to the situation and subject matter. He related them to processes of convergent and/or divergent thinking.
8.	Coherence of Organization	8.	Guilford did not, at that time, identify a specific ability which corresponds with coherence of organization.

These criteria can be found in various art activities and used in identification and screening programs, such as the number of ways one person might solve a single art problem (fluency), or work well in different types of art media (flexibility), use their own ideas rather than those suggested by the teacher or copied from another source (originality), carve a sculpture (analysis) or assemble a mobile (synthesize) and so forth.

Other criteria often cited for identifying creative ability, such as sense of humor, dedication and commitment, ability to work long hours on a single task, and ability to predict or prophesy (part of sensitivity to problems) can also be discovered in a person's approaches to making art. Some of the criteria might be revealed in the art work itself, other criteria through questionnaires and/or interviews.

Although not a complete analysis of the research and attitudes dealing with creativity and artistic talent, this brief review may provide a point of view by which a planned procedure for identifying and screening artistic talent can be administered. Having a point of view can give unity to an identification system.

Standardized Tests for the G/T in Art

There are two types of standardized tests related to art: those which test some aspect of artistic talent, taste, or aesthetic judgement, and those which require the testee to make a drawing, but test non-art factors such as intelligence or psychological states. Other tests, devised by a local school district for its own programs, may achieve a local standardization just through continuous use and occasional revision.

The oldest of the standardized art tests are The Meier Art Tests, published in 1929 as the Meier-Seashore Art Judgement Tests and revised in 1953 as the Meier Art Test. It consists of two parts: Art Judgement (grades 7-16, adult), and Aesthetic Perception (grades 9-16, adult). It is not a drawing test, but can be used to determine levels of aesthetic awareness. Alexander found the Meier Art Tests to be culture bound and of doubtful value for children under 12 years old (Alexander, 1981).

Tests such as the Bender-Gestalt, Housetree-person, Rutger's Drawing Test, and the Goodenough-Harris Draw a Man tests use drawings for evaluative purposes, but concentrate on describing general intelligence or perceptual problems. They were not designed for testing creativity or artistic ability.

Probably the most frequently used test for creativity is the Torrance Test for Creative Thinking. There are three types: Thinking Creatively with Words, Figural Tests, Thinking Creatively with Sounds and Words. The Figural Test has a series of picture completion, picture construction, and other devices to test for organization abilities. It does not test for artistic ability, but has been used in the upper elementary and junior high levels to screen students when identifying artistic creativity.[3]

Locally developed tests are also acceptable in screening and identifying purposes. They can be tailored to fit the objectives and purposes of the local program and revised to fit changes in the school program. For instance, the Artistically Talented Program (Public Schools, Norwalk, CT) for grades 4-6 and the secondary level, has been operating for about 16 years. Within that time, the project directors have designed and revised their own testing procedure. The elementary level test contains teacher orientation rating scales, original drawings, recommendation criteria, and a placement team. The secondary level test includes a portfolio of art work, peer ratings, biography, interview, tests and screening by a placement team. The local test is task-oriented. For instance, elementary students are asked to draw:

- -a mountain or a ranch, as if looking at it from above (to test ability to draw perspective)
- -an apple pie machine that picks, peels, prepares apples, and makes the pies in the orchard (tests ability to design and use imagination)
- -a human figure running or jumping (tests ability to draw figures with arms and legs bending)

In the Norwalk program, the local test is administered to students recommended by their teachers, and is evaluated by local judges. The Torrance Figural Tests are administered for the final screening and scored by the publisher. A local committee uses specific objective criteria when meeting in group to decide on each student's status and work. Numerical values can be assigned to specific criteria in local tests. Documentation of the scores and decisions is important for several reasons: a previous decision may need reviewing because an opening occurs, or some parents may protest the rejection of their child during the screening procedure. Supporting documentation may save considerable trouble.

Demonstrated Ability in Art

This aspect of the screening and identifying procedure in art is easily provided by examples of the student's art work. Samples might include work done in school and outside of school. Examples might be included with the initial application or be part of a portfolio brought to an in-

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terview. Teachers, parents or friends might recommend the student, or a student might recommend him or herself, depending upon the procedure designed into the project.

The locally constructed task-oriented test also shows demonstrated ability in art but its real purpose is to separate the top five percent from the rest of the student applicants in order to recognize outstanding talent. Examples of the applicant's work will show individual interests and accomplishments, the range or limitations of their abilities with different media and art forms, and give some idea of where they are in relation to other applicants. They do not provide the type of objective comparison which results when applicants produce art work based on a common assignment or range of assignments, however.

The assigned task provides the common denominator around which each applicant's work can be evaluated or compared. In the regular art class, the work of one child or student should not be compared with that of another, because each solves problems and expresses ideas in his or her own way based on his ability and experience. The testing situation is a forced and structured event for the specific purpose of identifying those students who are actually, or potentially, more advanced in their art ability than others in the same age group or grade level. Therefore, such comparison is necessary. The essential purpose of the locally constructed art test or screening procedure is to recognize outstanding creative abilities.

Recognizing Outstanding Talent in the Creative Arts

The assigned art task in the locally constructed test may be administered in a group or sent to the applicant to prepare at home and bring to an interview. Each method has its advantages, but one of the most important problems might be time. I recall my first experience with the Creative Arts Community, a program developed through the Capitol Region Education Council (CREC) in Greater Hartford (1975-1978) when we designed our evaluation and interview procedure. The applicants arrived, were given three tasks and interviewed with their portfolios. It took almost three days to test and interview about 75 or 80 student applicants from the Greater Hartford area. The following assigned tasks were given the applicants in groups of about 25 or 30 applicants each. The tasks tested two-dimensional and three-dimensional organization and art problem-solving abilities. All applicants were given:

-sheets of 12" x 18" colored construction paper and scissors. They were instructed to build a three-dimensional self-supporting structure that used the paper to interlock (no staples, glue, paste, sewing, etc.) within ten minutes.

-18" x 24" sheets of bogus paper, white poster tempera, black india ink, and watercolor brushes. Applicants were grouped around an elaborate still life and instructed to paint all or a section of the still life in ten minutes.

Another approach used by the Education Center for the Arts (New Haven, CT), sends applicants a task assignment with a personal questionnaire in a letter indicating time and date of their interview, and a request to bring a portfolio or examples of their work. By having applicants prepare task assignments at home, the screening process took one day. The applicants could also arrive at the time of their interview instead of coming early for the group process and then spend several hours (in some cases) waiting for the interview.

For ECA, applicants were asked to:

Select two of four problems and bring them with a portfolio to the interview. Students who had not had art, or did not have a portfolio, were instructed to choose three problems. This helped those who had potential but not much previous experience. The four problems were:

-take a number from 0 to 9, make an art work from it. Think of as many ideas as possible, save them, and bring all notes and sketches.

-choose a close friend, member of family, or relative, and make two portraits of the same person. Make them as different from each other as possible.

-record a dream you remember that had great impact. It does not have to be a recent dream. Draw it in a cartoon form. Include as many elements of the dream as possible, but do not use words.

-take a map and make a work of art from it, draw or paint on it, make a sculpture out of it.

The interviews concentrated on how the applicant encountered and solved the creative problems.

A similar approach is used by the Center for Creative Youth, a summer program at Wesleyan University (Middletown, CT). A letter is sent to the applicant with a questionnaire, the time for the interview, and several task assignments, from which the applicant chooses one. Two examples follow:

-Using six to ten different found objects (such as screws, a broken wheel, a soda can), construct a three-dimensional portrait of yourself at age 85. Try to use the materials in unusual ways. Try to show not only how you look at that age, but how you might feel. Don't worry about the details, but instead try to suggest the general characteristics, use glue, string, or wire to hold your piece together. The whole piece should be no bigger than 1½ feet by 1½ feet.

-Fold a large piece of paper in half. Using a pencil, charcoal, or crayons, do a drawing of the sun on one half, and do a drawing of the moon on the other. Think carefully about their differences and similarities.

The Portfolio

Another procedure for observing demonstrated artistic ability is the portfolio, in which applicants are asked to bring a selection of their best work to the interview. The portfolio allows the applicants to talk about their work in a relaxed fashion, and provides the review committee with examples of what the applicants:

-consider their best work;
-do in art outside of school hours, if they do anything;
-do in school, and the type of art program they are taking;
-demonstrate interests and abilities in areas such as ceramics, crafts, photography, film making, etc. not covered by the self-constructed ability tests.

The portfolio can provide two types of selections, one or both of which can be requested for the interview.

-A variety of different art products, media, and subject matter can demonstrate the applicant's flexibility within the art area; or, conversely, demonstrate the applicant's strengths in some areas and weaknesses in others.

-Several examples within a single media, technique or subject matter, arranged chronologically, can demonstrate the applicant's ability to grow, improve skills and concepts.

Evaluation of the portfolio could include:

-the quality of the student's work
-degree of originality and nature of imagination
-themes or basic interests of the student
-quality of finishing (mounting, matting) and presentation of work.

The assigned art tasks should reflect the objectives of the project, and preferably be designed by the same persons who will judge the results so that judgements can reflect the intent of the project. The judges may be members of the interview committee, or they may work separately, depending upon the nature and administrative structure of the program.

The Interview

The interview provides opportunity to recognize outstanding talent or creative ability in those factors not evident in the art work itself, such as dedication and commitment, ability to work long hours at a single task, interests outside of school, and professional goals and aspirations. A questionnaire sent prior to the interview can provide some information, while the interview deals with more subtle attitudes, and extra information necessary for making comparative judgements. To expedite the interview:

-a check sheet or rating form might be designed and used for each applicant
-each member of the review committee might cover specific areas of inquiry, rather than all members asking all questions hit or miss.

Through the interview the potentially talented can be separated from the talented, but potential here has two meanings. There will be those students who have had various opportunities and enriched art experiences, and there will be those who have had meager opportunities, no art program and are self-taught. Their interest, dedication, promise, and need for the program may exceed that of an applicant who has had a reasonably good and well-maintained art program. For this reason, applicants should be allowed to recommend themselves, or have someone else, a friend, recommend them. Some very talented applicants may not take art in school because the classes do not address their needs. These students are sometimes overlooked by teachers or other school personnel.

Commitment, motivation and energy are intangibles that are not demonstrated in standardized and assigned art tasks. They may be revealed in the interview through such factors as information about

the applicant's overcoming those parents who do not want their sons or daughters to be artists, by maneuvering guidance counselors who want to limit the art courses they take rather than give them more by taking out of school art classes, or by how long the applicants have known they wanted to be artists. Boys, in particular who like to draw and paint or are good in art may have to resist being called sissy, especially in the upper elementary and junior high school grades.

Finally, when the interviews are over and the rating forms completed, the recommendations are made. The rating forms should reflect the objectives of the program and the specific qualities looked for in the students who apply. A summary rating sheet might also be provided which indicates the applicant's status, i.e., acceptance or rejection. One copy of the rating sheet is kept for the records and another copy sent to the applicant.

In spite of well planned screening processes (the standardized tests, art task assignments, portfolios and interviews) there are occasionally those few students who, from the moment they walk in the door and show their work, make all the procedures and forms seem virtually meaningless. Then, all you can do is just let them talk and discuss their work. They are exciting, and you know this is what the project is all about.

In such programs, we may not find a Picasso, who at the age of nine astonished his father, an artist and instructor at the academy, with his drawings. But we may find and help a George Bellows who, at the age of ten, learned to fight the other kids to prove he was not a sissy because he liked to draw. We can encourage highly talented girls and boys who want to be artists but live in a social environment that is sometimes antagonistic to the arts. There is more interest in the arts now than in the past. Art education is different than when we were children. The artists in today's world are not painters starving in 19th century garrets. They are 20th century artists, graphic designers, commercial artists, illustrators, craftspersons, filmmakers, photographers, environmental designers and architects. Gifted and talented artistically creative students in today's schools will be the visual arts leaders of the 21st century. We already have examples of 21st century art forms in computer graphics, video, environments, acrylics and plastics. Our creatively gifted students in the arts today need all the help they can get for the future. Special art programs are exciting ways of helping them.

[1]Reprinted with permission of the *Roeper Review*, Vol. 4, No. 3 (February 1982), P.O. Box 329, Bloomingfield Hills, Michigan 48013.

[2]Robert J. Saunders is Art Consultant for the Connecticut State Department of Education and as such participates in the planning, screening, and identifying of applicants and monitoring of programs for the artistically gifted and talented within the state.

[3]Ed.'s note: For a complete discussion of the limitations of using tests of "creative thinking" as a screening procedure for programs for the gifted and talented see "Four Faces of Creativity" by D. Keating, pp. 3-5 of this issue. Dr. Keating's article represents a position on the use of such tests which closely reflects that of PSAP.

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Artistically Talented Program, Dr. Donald Rogers, Art Director, Board of education, 105 Main St., Norwalk, CT 06852.

Center for Creative Youth (CCY), B. Joan Hickey, Director, Wesleyan University, Middletown, CT 96546.

Creative Arts Community, Dr. John Allison, Director, sponsored by the Capital Regional Education Council (CREC), 212 King Phillip Drive, West Hartford, CT 06117.

Education Center for the Arts, James Undercofler, Director, sponsored by the Area Cooperative Education Services (ACES), 55 Audubon Street, New Haven, CT 06511.

Training Conference, cont'd. from p. 1

> "This intense, four-day, Training Conference is not only appropriate for public and private school personnel, but also for teams from other organizations (such as colleges or universities) wishing to provide academically oriented educational alternatives for highly able students. We understand that individuals will come to this conference with a broad variety of geographic and demographic needs. It is our intention to provide them with enough detailed information to allow them to formulate an explicit plan of action."

An Advanced Level Training Conference begins on February 15, 1983, and continues throughout the conference period. The Conference Faculty includes Dr. Sanford J. Cohn, Director of the Project for the Study of Academic Precocity (PSAP) at Arizona State University, Dr. William C. Durden, Director of the Center for the Advancement of Academically Talented Youths (CTY) at Johns Hopkins University, Dr. Nancy Robinson, Director of the Child Development Research Group (CDRG) at the University of Washington in Seattle, Dr. Wendy C. Roedell, Consultant to the Northwest Gifted Education Center in Seattle, Washington, and former curriculum developer with the Child Development Research Group (CDRG) at the University of Washington in Seattle, Dr. Julian C. Stanley, Founder and Director of the Study of Mathematically Precocious Youth (SMPY) at Johns Hopkins University, and teams of administrators and implementors from school districts and other institutions where model, academically oriented educational alternatives for intellectually gifted students are underway. For more information write: Second Annual Training Conference, Project for the Study of Academic Precocity (PSAP), Department of Special Education, Arizona State University, Tempe, Arizona 85287, or call (602) 965-4757.

TAPS (Tips for Artistically Precocious Students)

Spring opportunities for children interested or talented in the arts abound this year. Arizona State University will continue to offer its popular children's art and drama workshops and a Theater for Young Audiences production. Actor Lab Arizona, Inc., will offer matinee performances of two plays, children's drama classes, and traveling road shows for school performances.

Budding young thespians can enroll in the Children's Drama Workshops being offered by Arizona State University's Department of Theatre Saturday mornings beginning January 29 through March 12 by calling Johnny Saldana, (602) 965-2661. Classes for children in grades 1-3 will begin at 9 a.m. and end at 9:50 a.m., classes for 4th through 6th graders will run from 10 a.m. until 10:50 a.m., and classes for 7th through 9th grade students will start at 11 a.m. and finish at noon.

In addition, as part of the ASU Department of Theatre's *Theatre for Young Audiences* series, *Flashback* by Alice Wilson, et. al., will be performed four times March 4-6: Friday at 8 p.m., Saturday at 10 a.m. and 2 p.m., and Sunday at 2 p.m.

ASU's School of Art will begin its popular Children's Art Workshops February 12. The workshops, meeting on Saturday mornings on the ASU campus through April 23, will be offered for five through nine year olds and ten through 14 year old children. To enroll, contact Therese Bur at (602) 965-6981 or write: Children's Art Workshop, School of Art, Arizona State University, Tempe, Arizona 85287.

Actors Lab Arizona, Inc., will be offering Thursday matinees at special rates for school and other children's groups of two plays this spring: *The Merchant of Venice* by William Shakespeare and *Scapino!*, an adaptation of Moliere's *Scapin*. Performances of *The Merchant of Venice* will be staged in February and *Scapino!* will be performed in April and May. Actors Lab Arizona, Inc., also offers traveling roadshows and drama workshops to schools for students in grades K-junior high school. Sample productions include "A Taste of Shakespeare," "Free to Be You and Me!," and "Out of Our Mimes!" For more information call (602) 990-1731 or write: Actors Lab Arizona, Inc., 7624 E. Indian School Road, Suite 114, Scottsdale, Arizona 85252.

1983 TALENT SEARCH UPDATE

*Debbie Lawyer**

One of the many research and educational activities The Project for the Study of Academic Precocity (PSAP) conducts is an annual Talent Search for seventh and eighth graders who are highly able mathematical and verbal reasoners through the use of the Scholastic Aptitude Test (SAT). This year to date we have received over 12,000 applications for the 1983 Talent Search from students in Alaska, Arizona, California, Hawaii, Oregon, Washington, and the Canadian provinces of Alberta, British Columbia, Manitoba, Saskatchewan, and Ontario.

Those students who followed the lengthy procedure and registered for the SAT with the Educational Testing Service (ETS) in Princeton, New Jersey, before the December 29, 1982 deadline will take the test on January 22, 1983, at designated test sites throughout the Talent Search region. After PSAP receives 1983 Talent Search participants' SAT scores from ETS, each will receive a counseling packet that will include a Score Interpretation Bulletin to help the students understand what their scores mean and what educational options might be appropriate for them based on those scores. Details of summer programs offered throughout the United States for Talent Search participants at various universities are also included in the counseling packet.

In the late spring, an awards ceremony will be held in each state and province to honor those students who took part in the Talent Search. All Talent Search participants will receive certificates, with high scorers earning special certificates and book awards. Schools with five or more high scorers will also receive certificates and book awards. Top scoring participants will receive scholarships at local universities and other prizes. The staff of PSAP wishes all of you who are taking part in the 1983 Talent Search the best of luck!

*Debbie Lawyer is Talent Search Administrator for PSAP. For more information about PSAP's annual Talent Search, contact Ms. Lawyer at (602) 965-1460 or write: PSAP Talent Search, Department of Special Education, Arizona State University, Tempe, Arizona 85287.

PROVIDING AND SUPPORTING AN ACADEMICALLY-BASED GIFTED PROGRAM[1]

Linda Moran and Barbara Wright[2]

The education of the gifted child can be the most challenging, stimulating, or frustrating of professional experiences for the classroom teacher. Regardless of the grade, the teacher can make the crucial difference in the success or failure of the gifted child within the educational system. This is particularly true within the public schools, where priorities are often set which give little regard to the academically gifted child[3].

Whether the intellectually able child is enrolled full-time in a specialized academic program or is mainstreamed into a heterogenous classroom, the concerned teacher can and should provide necessary support services. These services should include all of the following: a) individual programming that can accommodate the child at differentiated levels, b) role modeling with particular emphasis in the areas of academic continuation and social mobility and c) information and support liaison to provide consultation to students, parents, and school personnel.

All students, even in the lower grades, rarely bring into a classroom the same degree of preparedness and maturity. Through the use of diagnostic testing and prescriptive instruction, a child's abilities can be individually assessed and serviced (Stanley, 1976). The cornerstones of a program for the academically gifted should, in language arts, include mastery of grammar, rhetoric, vocabulary, writing, and literature (Cohn, 1981). Mathematics skills taught in such a program should include mastery of basic computation, the pre-calculus sequence, and college mathematics (Stanley, 1979, pp. 169-185). Support skills for these two areas include mastery of research and study methods (Cohn, 1981).

In the area of language arts, a student's knowledge of grammar and exposure to rhetoric are the keys to future success in dealing with language. Grammar is a skill learned through a building process. Some students are instinctively aware of the building blocks while some stumble over them. Through the use of diagnostic/prescriptive teaching (including the use of pre- and post-testing), individual assignments and teacher pacing, weaknesses can be corrected and students can master the complexities of coping with their own writing. For some students, exposure to the proper use of grammar by others is all that is needed to help them encompass these skills, while others must methodically tramp through the grammar book skill by skill.

Rhetoric, on the other hand, can best be taught through exposure to successful writers and their works. By allowing students to individually experiment with various styles, development of this skill can be practiced and reinforced. The best way to learn to write is through imitation. Students need access to an excellent grammar book and a collection of various styles of writing, consisting of works by both students and established authors. The use of sentence building exercises, starting with simple sentences and expanding to complex paragraphing, aids in the development of these skills.

The study of vocabulary is basic to a higher level of rhetorical development. Because children at all levels are fascinated by words and their origins, the study of vocabulary can be expanded and made enjoyable through the study of etymology. Through an awareness of the history of words students can successfully develop a more complex vocabulary. Using Latin and Greek roots to approach a vocabulary study is very practical (Cohn, 1981), since the majority of English words derive from these two languages.

Good spelling is essential to a well-written paper. It is a skill that is often assumed present in the verbally able child but is often lacking. When an error-free paper is a major goal of the writing process, spelling becomes of great importance to the student. An individual and ongoing spelling program must assume a regular place in the study process for writing.

The interplay of grammar, rhetoric, vocabulary, and spelling becomes evident to students during the revising and editing process. It is here that their textbook knowledge ceases to be just an exercise and instead becomes a logical component for success in writing. Rewriting should be done at all levels, from basic sentences to finished compositions. The rewriting of a graded paper should be an automatic assignment for the students.

The literary component in individual programming should consist of the study of literature and literary awareness. The study of literature requires reasonable speed and good comprehension as a foundation. From this foundation the development of sequencing skills, inference making, understanding main ideas, and conclusions will lead to more advanced literary ideas such as theme, characterization, setting, and mood. Eventually, understanding of allegorical symbolism, metaphorical usage, and satirical intent can be fostered.

At any level, a child can progress to higher skills as he shows understanding as judged by his selection of reading materials. Students need exposure at a challenging level to a wide range of literary materials which should include the short story, novel, drama, poetry, and essay (Casserly, 1968; 1969). While some classroom anthologies will meet these needs, most teachers will find it necessary to provide supplementary materials in order to help develop the basic literary awareness skills. Some students will need to be encouraged to expand their reading horizons by required reading assignments, a detailed suggested reading list, and required book reviews.[4]

In the area of mathematics, a student's knowledge of basic computation skills is essential to further development. Basic computation skills should include number awareness and the four operations as used in whole numbers, decimals, fractions and integers. A mastery of the use of basic equations, formulas, percentages, measurement, graphs and charts must also be included. In this most basic area, diagnostic/prescriptive testing is crucial, not only to develop skills when they are needed, but also to keep alive the student's interest in mathematics. Prolonged teaching of an already acquired skill, followed by continuous repetition for "reinforcement," does more to undermine interest in mathematics than it does to polish the skill (Stanley, 1977, pp. 75-112). The use of pre- and post-testing, with individualized assignments supervised by teacher pacing, will enhance learning and reduce tediousness. A balance between rapid progress and mastery of the skill needs to be maintained. Regardless of the student's age, once basic computation mastery is achieved, the real study of mathematics should being (Stanley, 1974; Fox, 1979, pp. 169-185;Robinson, 1979, pp. 138-154).

The real study of mathematics begins with a pre-algebra course, followed by courses in algebra, trigonometry, and plane and analytical geometry. This is generally considered the pre-calculus sequence and is recommended in the order given above (Stanley, 1974). With the possible exception of the geometries, all of the other courses lend themselves well to a continuation of a plan of study similar to that used in the basic computation mode. The use of a teacher as a resource for necessary explanations and elaboration to both small groups and individuals becomes vital to the program. The ability to progress through new and challenging skills at his own rate is the prime motivating factor for each student. However, at no time should the teacher relinquish control of the minimal rate of progression through any of these courses: a group lecture situation often is more efficient in teaching the

geometries.

Just as the mastery of basic computation allowed access to real mathematics, completion of the pre-calculus sequence should ensure immediate entry into college level mathematics. A qualified teacher for these courses may be more difficult to locate within the K-12 school system (Stanley, 1974). Because of the higher level of knowledge required, the use of outside resources may become necessary and would include the use of junior college and university staff members as well as mentors from within the community who are mathematically able. These courses should follow a required plan of study acceptable on the college level.

At all levels, many academically gifted children are deficient in academic support skills. Often such students' knowledge of research and study skills are virtually non-existent because, in the early grades, much of the material being taught to them is absorbed and processed so easily that there isn't an opportunity for study skills to develop naturally. In addition, teachers sometimes assume that because a child is academically able the normal support skills are already developed and, consequently, either expect more from the child than the child can deliver or fail to teach the child such skills. Study skills instruction, including listening skills, skills in preparing for tests, note taking, active questioning, time management, extensive library science skills, and appreciation of work quality, should begin in the lower grades. These skills should be reinforced continuously throughout the student's educational career.

In the earliest grades, the first skills to be developed by the children should be good listening (including the abil'ty to follow directions) and active questioning, which hinges upon listening skills. Through group discussion on various topics, the child can learn the types of questioning that will further his knowledge. The foundations of library science should also be stressed in the early grades. Children should learn library manners, the basics of locating materials and, as the child's reading ability progresses, the full use of library facilities, encompassing the use of the card catalog, types of reference materials and their uses, and the two primary library filing systems.

It is at this point that students can begin building note-taking skills, both from class lecture and individual research and reading. Students need to be exposed to a wide variety of note-taking systems and then encouraged to develop the system with which they are the most comfortable.

As students leave the primary grades and their interests expand academically, physically, and socially, the concept of time management should be introduced to provide a framework for full utilization of the student's time. Learning to intelligently schedule both short and long range activities can free the student from the ubiquitous "procrastination syndrome," a malady with which even graduate students suffer. The rewards of developing time management skills can quickly be seen both by students as they begin to have more time to pursue personal interests and by the teacher in the higher quality of work submitted and fewer late or missing assignments. Keeping an assignment sheet and an organized notebook fosters the development of both time management skills and pride in the quality of one's work. Students see that the care taken in assignments results not only in personal satisfaction at a job well done but also in higher grades and often better comprehension of the material (Schmelzer, 1980).

In the area of role modeling, two primary areas of concern are the importance of academic continuation and the value and benefits of social mobility. Role modeling has been shown to be the method through which children learn their strongest beliefs and development of personal values (Piaget, 1958; Fox 1974). Because academically gifted children tend to be more observant of adult actions and behaviors, teachers of the gifted need to model their own strong beliefs in the value of continuing one's education. This can be demonstrated through a variety of means, including an appreciation of literature, art, music, diverse cultures, and human interactions.

Showing students that reading is more than an assigned task and, in fact, can be an adventure or an open doorway to wider, more diverse experiences, is a successful way of developing an appreciation for literature. This can be done by formal and informal discussion groups in class, allowing the students to see teachers reading and enjoying books, and sharing recommendations and knowledge from books stemming from a variety of topics. Nothing increases interest in a book more than hearing about it from someone who has enjoyed it and is considered a prime role model. The development and appreciation of art and music can be similarly fostered. The idea of inviting a student to attend a fine arts performance or display should be the norm instead of a rare occasion for the teacher of the gifted. Classroom time spent in discussion of an art exhibition, theater production, or a movie or television production can often be of great importance in fostering the student's ability to select worthwhile cultural entertainment. It may only be through non-required exposure that some children will be exposed again by their own choice. It is through the act of voluntarily choosing activities that a child will decide his likes or dislikes of diverse cultural activities.

An appreciation of human interaction is a by-product of logical thinking skills. Although logical or critical thinking should be taught formally in the classroom, the true development of these skills only occurs when the child starts to use them in daily life. By allowing the students to observe and participate in a variety of discussions, we allow them to develop the concept that ideas are not necessarily easily definable and may remain in a shadowed area that is constantly changing. It is important that students be allowed to observe various authority figures who take different sides of a question, maintain a civil discussion, and, if not accept the others' views, at least understand them more clearly.

The exposure to all of these areas will help to ensure the academic progress of an able child, both formally and informally. As students interact with a variety of social groups through these expanded contacts, they develop the skills necessary to function not only with age peers but also with their social, interest, and academic peers. Role models need to be very aware of the "sponge period" of a child's life: that time when a child is openly seeking more information on the widest possible range of topics, often accepting the given information as unquestionable fact. It sometimes becomes necessary for the role model to precede every statement with the words ". . . and in my opinion . . ." during this time period. It is also helpful for the adult to present contrasting views if the child still appears to be accepting everything without question. It is necessary for the adult role model to maintain a balance between the desire to appear perfect and the reality of being one's own self. Children of any ability quickly detect phoniness, and the academically able child appears to detect any insincerity more quickly.

As a result of appearing as a role model, the teacher of the academically able will find it necessary to act as a counselor and liaison to provide support and information to students, parents, and feeder and home school personnel. In counseling the student, the teacher has many responsibilities, including the presentation of long-range alternatives for educational planning and development of the child's sense of self-worth. As soon as a child is ready for accelerated work in a subject area, long-range alternatives for educational opportunities need to be explained. This includes mapping out an entire academic program through several school levels, encouraging early entrance to a new academic level, whether it be third grade, junior high, high school, or college (Keating, 1972, 1979; Fox, 1979, pp. 169-185), and developing wide areas of individual study programs with possible use of mentors, individual or group advanced placement classes, or teacher-directed, self-pacing individual work.[5] Practice and successful development of good time management, a high quality of work, and the use of critical thinking skills enhance the child's positive self-concept. Following this development, the child's appreciation of his own intelligence will begin to form. This will allow the child to participate more fully in all future academic planning

The parents of an academically gifted child will also need guidance in understanding their child's academic and social potential and capabilities. Quite often, parents tend to view their child as being typical of his age group in all areas, instead of representing a combination of different academic, social and physical levels. It is through these three areas that the teacher can be of the most help to the parents by working with them to develop a well-rounded program for their child. This assistance includes the provision of opportunities for physical, mental, and social growth, basing the level addressed in each of these areas on the child's own abilities, and is dependent upon the teacher's awareness of the availability of various resources within the community.

Because of the many differences between school districts, and even schools within districts, and because of the high level of mobility of the American population, it is essential that parents continually be aware of changing opportunities and the necessity of documenting their child's progress. The teacher can help facilitate this process by showing parents how to document ability and achievement levels and by providing examples of work in the tool subject areas that will enable the parents to work with the schools in formulating the best educational opportunities for their child.

The teacher of the academically gifted will also need to dispel the myths surrounding the gifted child with both the home school and feeder school personnel (Daurio, 1979, pp. 107-121). The areas primarily ignored by educators because of the myths surrounding the academically able include the importance of providing an academically-based gifted program, the necessity of counseling and

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Providing Supporting cont'd. from p. 11

long-range planning for both the student and the school, and the ability of girls to function successfully not only in the academic world but also in mathematics (Fox, 1977, pp. 113-138; 1980). Many times, the teacher is the person most capable of doing the groundwork in the home school and feeder schools to foster and develop a solid academic program. This in turn allows the parents to build an individual program for their child with less resistance from the schools. The level of success of both parents and their able children within any school system will depend heavily on the flexibility of the schools within that district, that is, the school's ability to bend and stretch without disrupting the academic success of all their students.

As a classroom teacher, facing the challenges of providing for the academically gifted child can be very rewarding. The success of this undertaking will be proportionate to the teacher's willingness to develop appropriate programming, work with parents and school personnel and allow himself to be scrutinized by these exceptional children. The solutions will never be final. They will be in constant flux from year to year and from student to student. Since teachers have worked through the educational maze toward a better education, and hopefully have developed a strong appreciation of their own knowledge and abilities, it is the ideal that the classroom teacher will take appropriate action to add to the success of these academically able students.

[1]This paper was first presented at the Annual Conference of the National Association of Gifted Children (NAGC), in Portland, Oregon, November, 1981.

[2]Barbara Wright and Linda Moran are currently classroom teachers at Estrella Junior High School, Cartright School District, in Phoenix, Arizona, and also teach classes in the tool subjects for the Project for the Study of Academic Precocity (PSAP) in addition to having helped develop and maintain the current gifted program in their junior high school. What follows is a brief description of their existing junior high school program:

The Extended Studies Program is designed to service the academically able child in language arts and mathematics. Students can be enrolled in the program full time (three periods per day) or only enrolled in the mathematics section (one period per day). The language arts program encompasses two years of work in grammar, rhetoric, vocabulary, spelling, writing, and extensive literature. This is supplemented by other areas which include study skills, history of drama, introductory philosophy, research skills, critical thinking, French and Latin, and speech and oral interpretation. The mathematics program consists of the pre-calculus sequence (which includes pre-algebra), the first three years of algebra, and geometry. Many students in this program have succeeded on the Scholastic Aptitude Test (SAT) at a level equal to or higher than the average high school senior. This, in turn, has led students to participate in both advanced high school and college courses. Further information can be obtained by writing either individual at 10202 North 45th Avenue, Glendale, Arizona 85302.

[3]For additional discussion of the setting of priorities vis-a-vis gifted students in the public schools see "Four Faces of Creativity" by D. Keating on pp. 3-6 of this issue of the *Chronicle*.

[4]The Advanced Placement English materials published by The College Board is a good resource to start developing a reading list.

[5]An alternative to consider is participation in one of the many academic talent searches conducted throughout the United States and the classes offered by various schools for Talent Search participants. For further information about PSAP's Talent Search or classes contact: Debbie Lawyer, Talent Search Coordinator, PSAP, Department of Special Education, Arizona State University 85287, (602) 965-1460.

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AZ GOVERNOR'S MATH/SCIENCE PROPOSALS

Arizona Governor Bruce Babbitt, in a speech to the Kawanis Club last fall, called for an increased emphasis on mathematics and science education in the State's public school systems. As part of his proposals, Governor Babbitt suggested the formation of math and science centers at Arizona's universities for outstanding high school students. Dr. Sanford J. Cohn, Director of PSAP, has been selected as a member of a university-wide Task Force for Mathematics and Science at Arizona State to develop guidelines and recommendations for such programs. We have reprinted the text of Governor Babbitt's speech below:

"Educational excellence is not an abstract issue in Arizona. Rather, it directly affects the job futures of our children and our total economic development. Arizona has already cast its future with high technology.

In the last three years we have, with the strong support of the private technology sector, made a large investment in our university system to support excellence in biological sciences, physical sciences and engineering. This commitment must now be extended throughout our public education system.

The proposals which follow are just a beginning. While they are focused on the basic issue of achievement in mathematics and science, there is no question that similar problems confront us in basic literacy, use of the English language, and indeed the entire spectrum of liberal arts.

1. HIGHER ADMISSION REQUIREMENTS FOR MATH AND SCIENCE IN OUR STATE UNIVERSITIES. The most direct approach to raising standards is to make demands on students, particularly those going to college. **I am therefore requesting that the Board of Regents consider a policy that all three Arizona universities require three years of mathematics, and two years of science as a condition of admission..**
2. MATH AND SCIENCE CENTERS AT OUR UNIVERSITIES FOR OUTSTANDING HIGH SCHOOL STUDENTS. At the same time that we build a solid math/science base for all our students, we must

also make a stronger effort to provide opportunity for students of exceptional ability. I have asked all three University presidents to take the initiative for developing summer math and science programs at the university level. These Centers will coordinate coursework and counseling, working in cooperation with high school teachers, for our most outstanding secondary students. Scholarships should be made available to those who otherwise would not be able to attend.

3. A STUDENT LOAN PROGRAM TO ENCOURAGE MORE MATH AND SCIENCE TEACHERS. As we act to raise curriculum standards across the board and to provide special opportunity for the gifted, we must also confront the impending shortage of math and science teachers. This shortage cannot be remedied overnight, but we can take steps to reverse the trend.
   One useful incentive is to establish a student loan program that would allow new science teachers to pay back their indebtedness through service in our schools. While this is not a complete answer to the salary disparity that is drawing students from teaching, it will provide an added inducement to more graduates to begin their career in teaching. For these reasons, I will ask the Legislature to enact a special student loan program for math and science teachers when it reconvenes in January.
4. SUMMER SCIENCE AND MATH INSTITUTES FOR TEACHERS. While we need to encourage more people to enter teaching in these vital fields, we must also help current teachers in their efforts to be as effective as possible. I am therefore recommending that special math and science institutes be established for teachers at our universities to assist them in updating their skills and in keeping abreast of the most recent advances in their fields.
5. COMPUTER LITERACY AS A REQUIREMENT FOR STATE TEACHER CERTIFICATION. Computers are the new reality of our educational environment. By the year 1990, 90 million Americans will be working with computers on the job. Here in Arizona, with our strong technical base, computers will be even more important. We cannot let our children leave school without the basic ABC's of computer usage.
   Before we can demand computer literacy of our children, however, we must ensure that our teachers are equipped to instruct our children in the use of computers. I am therefore calling on the State Board of Education to include basic computer knowledge as a requirement for new state teacher certification. I will also encourage school districts to make provisions for existing teachers to be trained in this critical skill.
6. "TEAM-TEACHING" EFFORTS BETWEEN EDUCATORS AND INDUSTRY SPECIALISTS. To help promote the utilization of our science and math professionals to aid classroom teachers, I will work to establish a demonstration "team-teaching" program in at least one of our school districts in which the expertise of companies like Motorola, Sperry, and others, can supplement the work of our teachers in improving math and science instruction.

Education excellence is a challenge that we must accept. These proposals are the beginning of a program of improved education. In the months ahead, I pledge to work to further this beginning."

HUNTER COLLEGE G/T PROGRAM OFFERED

Hunter College of the City University of New York will offer a special program in education of the gifted and talented as part of its 1983-84 Junior Year in New York academic offerings. The program will provide opportunities for participants to explore and apply the theories of teaching the gifted and talented through direct participation with them in both academic and non-academic settings.

The program offers unique opportunities to develop specialized teaching skills, observe master teachers in educational settings, and to interact with gifted and talented students in both homogeneous and heterogeneous situations.

Programs for individual students vary according to the needs and goals of the participants. Applications for the 1983-84 academic year are now being accepted. Space is limited and preference will be given to applicants who have successfully completed course work in child, developmental, or educational psychology. For more information call (212) 570-5433 of write: Junior Year in New York, Box 1347, Hunter College, CUNY, 695 Park Avenue, New York, New York 10021.

WORLD COUNCIL STUDENT NETWORK FORMED

The World Council for Gifted and Talented Children has announced the creation of a World Council Student Network to encourage communication between students of giftedness around the world. The new network's aims are:

a) to provide a forum for the sharing and exchange of information relevant to thesis research, graduate education, and career opportunities;
b) to create opportunities for collaborative cross-cultural research;
c) to encourage student participation at World Conferences for Gifted and Talented Children.

Membership in the Student Network is automatic with subscription to the World Council for Gifted and Talented Children. A special reduced student rate is available. For more information, contact Arlene Dover, McGill University, Dept. of Educational Psychology, 3700 McTavish Street, Montreal, Quebec, Canada H3A 1Y2.

BOOK REVIEW:

Does This Mean my Kid's a Genius?

by Linda Perigo Moore
*Jadis Ullman**

Does This Mean My Kid's a Genius? by Linda Perigo Moore is a book written by an educated parent for the intelligent layperson and as such has some unique advantages and drawbacks. Ms. Moore's common sense approach and personal experience as the parent of a bright child, as well as her sense of humor, make her book one which parents of highly able children would be well-advised to read. It is important to note, however, that this book should not be used as a complete academic description of problems and solutions, but rather as one which addresses common parental concerns in layperson's terms.

Practical information is given concerning not only the reasons for early detection of ability, but also what to look for and standard methods of identification. A decription of standardized tests is given. When the parent must depend on a series of tests to evaluate a child, it is noted that he must: a) educate himself about the tests given to the child, b) demand his rights to information, including his legal right to an explanation of any part of the child's education and test scores, c) learn about the tests that *don't* discriminate against the gifted, and d) use parent power to help schools investigate tests and determine the use of the test results.

It is sometimes difficult, after determining that a child does have unusual abilities, for parents (or neighbors, teachers and relatives) to "cope with the news". Ms. Moore discusses commop reactions, classifying people as disbelievers, curiosity seekers, fans, prophets, finger pointers, etc. Her clear and humorous descriptions of each type will be easily recognized by those who have had to deal with neighborhood reactions to giftedness, and her explanation of the reasons for this hostility is clear and to the point. Perhaps the most sensitive and important section of this chapter is that which describes the confusion parents themselves often feel as their child develops advanced abilities. Many are torn between the fear that they will be "bragging" if they tell others about their child (or will be acting like pushy parents if they expect their child to achieve to his full potential) and the fear that they will be essentially hiding him in a closet, or stifling him, if they don't. In relating her own resolution of this conflict, Ms. Moore notes many of the pitfalls that parents of bright children must avoid, difficulties they may encounter, and their new responsibilities to their child, to society, to their other children, and to themselves.

When discussing education, Ms. Moore suggests ideas for development at home (including "Ten Commandments for Rearing a Gifted Child") and describes types of schools and special programs for gifted children. There are many problems encountered by parents in dealing with schools and possible solutions to these problems are given. It is important for parents to be aware of the power structure within the school, what options are available or desirable for their child, and how to seek out ad provide these options. A final chapter relates the importance of parent groups (and the types of people one is likely to encounter within such groups), as well as the importance of knowing and demanding those legal rights which must be met if parents of gifted children are to take an active role in their child's development.

*Ms. Ullman is Associate Editor of the *Chronicle* and, as a PSAP Project Associate, operates the PSAP Evaluation Clinic.

MOTIVATION METHODS*

A List of Practical Suggestions

In a recent Kappan article, Benjamin Bloom (1982) examines the characteristics of master teachers regarding motivation. He found that in most cases the master teacher had worked out a detailed plan for instruction. Evidence of progress and improvement were used to maintain motivation and to put renewed and enthusiastic effort into the learning process. Although rarely praised, students were continually kept informed of progress. Also there was usually an ultimate goal in mind (that might include surpassing records set by others in the field of giving public performances).

Dale Davis (1977) interviewed 84 teachers and compiled the following list of most promising teacher approaches or methods to motivate students.

1. Show interest and concern in student work; give personal help when needed.
2. Be clear.
3. Make materials meaningful to students' lives and future goals.
4. Do not rush; work at a reasonable pace.
5. Use a variety of methods and materials, choosing each one carefully.
6. Plan your teaching and be well prepared.
7. Make goals and objectives clear to students.
8. Show interest and enthusiasm.
9. Involve students through the use of discussion, discovery approaches, individual assignments and at times group planning.
10. Use external motivators (i.e., interest, desire for recognition and praise, good grades, avoiding failure, and concern for the future.)

Nancy Reckinger (1981) adds the following suggestions in her advice to teachers and parents.

> Continue motivating your child as you did with walking and talking - and ask the school to work with you - to:
> Encourage your students. Expect them to be able, competent, responsible.
> Comfort and support when there are setbacks, fear, discouragement.
> Appreciate small steps.
> Allow - expect - many trials and don't keep track of them.
> Record only successes. Applaud them.
> Pay attention. Actively listen, especially to feelings.
> Provide opportunities for your child to use developing skills.
> Be sure your child is aware of and values his/her successes.
> Set aside lots of time for practice. Don't rush new skills.
> Maintain limits. You know what is safe and what is harmful.
> Enjoy your child. Be more of a guide, enabler, teacher, and fellow-learner than boss or judge. Your support, love, and example are valuable motivators to your child.

Continuing motivation is a concept that is gaining recognition. It is defined as the tendency to return to and continue working on tasks away from the instructional context and is important for two reasons: Increasingly complex societies require a continuous education (people must learn new skills); and there is growing appreciation that motivation is an important end result, every bit as important as achievement test scores.

Declining birth rates and the aging of a baby boom population is causing what some people term "the graying of America." An aging society cannot afford to ignore the motivational effects of aging. Martin Maehr and Douglas Kleiber (1981) suggest that such a study is likely to have interesting effects both on how we define achievement motivation and how we study it. They ask, "Is achievement motivation a construct that only describes the behavior of the young?"

Motivation is a very constant thing. It does not change much except slowly, and over a long period of time. Some suggest it is a personality trait, remaining relatively stable throughout life. But study of older people suggests that more external, competetive patterns of achievement give way with age to more intrinsic, task-oriented patterns. Clearly we need more research on whether motivation is a developmental construct and whether a changing population - an aging population - will change its form of motivation.

*Reprinted from *Practical Applications of Research*, Newsletter of Phi Delta Kappa's Center on Evaluation, Development, and Research, Vol. 5, No. 1 (Sept. 1982), pp. 3-4.

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TIPS
(Tips for Intellectually Precocious Students)

SAGE SUMMER PROGRAM

The School for the Advancement of Gifted Education (SAGE) will offer a six week summer program this year for gifted children of preschool age (2½ through 5) who qualify by entry testing. Testing may be arranged by calling SAGE at (602) 956-1576 or 945-0290. SAGE will offer classes in the arts and sciences including painting, drawing, sculpting, printmaking, art appreciation, weather, the earth, and the universe.

The summer program, beginning June 6th and ending July 14th, will be held three days a week, Monday, Wednesday, and Friday, from 8:30 a.m. until noon. Registration fees for the program are $225 with a $50.00 deposit due by February 15, 1983 to reserve a space for your child. The balance of the fees are due June 1, 1983. For further information, contact SAGE at 4330 N. 62nd Street, Scottsdale, Arizona 85251, or by calling one of the telephone numbers listed above.

ASU TO STANFORD

*Mary Frost**

In August of 1980, I became the first PSAP-sponsored full-time early entrant to Arizona State University. I was accepted for admission after the tenth grade without a high school diploma.

I have done well at Arizona State University, making the Dean's Honor List every semester while pursuing a Bachelor of Science degree in Applied Mathematics. In addition, I have worked as a Project Associate for the Project for the Study of Academic Precocity (PSAP) and as a professional accompanist for several choral and theater groups in the local community.

My experiences since entering Arizona State University, both academic and non-academic, have been very positive. The college level coursework has certainly been more challenging and rigorous than any my high school could have offered. From the time I decided to enter early, however, I had planned to transfer to a university with a more challenging mathematics curriculum.

I began the involved and tedious transfer process in August of 1981 and, after a brief feeling of relief when the applications were finally in the mail, anxiety about the outcome set in. As it turned out, the anxiety was unnecessary. Stanford, Princeton, and the Massachusetts Institute of Technology (MIT) all accepted me.

It was very difficult for me to make a decision as to which of these outstanding universities I would attend. I tentatively accepted all three and anxiously awaited word regarding transfer credit, scholarships, and housing. After carefully weighing all of the information, I made my decision. I decided to attend Stanford this fall where I have been granted full junior standing to pursue a Bachelor of Science degree in Mathematical Sciences.

*Mary Frost was PSAP's first radical accelerant and has been an important part of the Project team at Arizona State University. Those readers interested in a more detailed accounting of her experiences at ASU are referred to "Tenth Grade to College" by Mary, published in Vol. 1, No. 1, of the *Chronicle of Academic and Artistic Precocity* on page 4. We all wish Mary good fortune and great academic success at Stanford University. We will miss her.

A TRIBUTE TO CHARLES DICKENS

*Jane Larson**

Charles Dickens, regarded as one of the great novelists of the world, possessed phenomenal powers of observation, a wonderful memory, and amazing vitality. "I am afraid he has too much talent for his genius," said Emerson, "It is a fearful locomotive to which he is bound and he can never be free from it or at rest." (in Wagenknecht, 1966, p. 64). Although his fictional characters have been accused of being mawkish, theatrical and caricatures of real life, we can often delve into our own childhood to discover comic Dickensian characters, peculiar relatives or odd neighbors. His world is unlike ours, "but it is a coherent, vital, and immortal world in its own right" (Kunitz, 1936, p. 184). Somehow his characters are not mechanical, but they give us a feeling of human depth. Dickens "is a Maker, a dramatic and epic poet working in prose, a haunted tragic-comedian of mythopoetic genius" (Tomlin, 1969, p. 30).

The second of eight children, Charles was born in Portsea, England in 1812, the son of a clerk in the Navy Pay Office. His paternal grandparents were servants; his maternal grandfather was an embezzler. When Charles was two the family moved to Chatham for six years. Happy there, though in weak health, he had a passion for reading, awakened by his mother who taught him his letters and early reading. While other boys played outdoors, Dickens precociously began devouring the pages of *The Arabian Nights, Robinson Crusoe, Gil Blas, Tales of the Genii, Don Quixote,* and the novels of Fielding and Goldsmith (Tomlin, 1969, p. 43).

From the age of seven, he was taken to the theater and reveled in it. "In the tiny Theatre Royal he clapped joyfully at the clown Grimaldi; before he was ten he shivered in terror at Richard III and Macbeth." (Tomlin, 1969, p. 44). During his last two years at Chatham he was sent to a school nearby taught by the son of a minister. His first writing was a juvenile tragedy called *Misnar* created sometime before the age of nine (Forster, 1876, p. 10). He was called upon by adults at home to entertain with comic songs and stories. Chatham was truly the birthplace of his fancy. His father's main contribution to his education was demonstrating by his own example how important money is in the world.

In 1822 John Dickens was transferred to London deeply in debt. The "new" home was a shabby tenament. At this time no further attempts were made towards Charles' education due to his family's severe financial straits. These were his darkest days and had a profound influence on his life and writing. For a few shillings a week Charles had to work in a blacking factory pasting labels on bottles. His father was thrown into prison for debt. It was an appalling shock to the sensitive boy who had hopes of being a learned and distinguished person. The whole experience made him more aware of the London poor and the sufferings of others. It provided a strength of character and important preparation for his life as a novelist. "Deep within him, he resolved that he should never again be so victimized. He would toil, he would fall prey to none of his father's financial imprudence, he would let nothing stand between him and ambition" (Tomlin, 1969, p. 45). Certain chapters of *David Copperfield* are autobiographical relating to his work in the bottle warehouse.

Charles did finally attend school for two years after some improvement in the financial situation due to a legacy left to his father. But in 1827 he left school because of more money problems and worked in a law office. He then taught himself shorthand and became a reporter. In those days a reporter was like a stenographer. He did reporting in the House of Commons for the *True Son, Mirror of Parliament,* and the *Morning Chronicle.* Meanwhile, he did a great deal of leisure reading at the British Museum and often attended the theater. He had a real talent for mimicry and considered acting as a career. His hobby throughout life was the theatre; he staged and acted in many plays.

In 1833, at the age of 21, his first published sketch appeared in the *Old Monthly Magazine* and was signed "Boz," a brother's nickname. Later sketches appeared in the *Evening Chronicle.* They were collected and published as a book entitled *Sketches by Boz* and illustrated by George Cruikshank (Dexter, 1937, p. 24). Charles Dickens, at that time twenty-four years old, wrote the *Pickwick Papers.* Soon after, he was married. By the age of twenty-five he was famous. A steady stream of novels followed for thirty years. Some of the works were *Oliver Twist, Nicholas Nickleby, The Old Curiosity Shop, Martin Chuzzlewit, A Christmas Carol, David Copperfield,* and *Hard Times.*

In 1858, after having being married for twenty-two years, he separated from his wife who had borne him ten children. This caused a scandal but did not diminish his popularity or sales. Two of his greatest dramatic books, *A Tale of Two Cities* and *Great Expectations,* were written after the break-up of his marriage. Always incompatible with his wife, his liason with a young actress added more fuel to the fire for the scandal mongers. The end of his marriage seemed, along with the blacking house experience, to affect his writing profoundly. In the last twelve years of his life, his work showed even greater depth, maturity, and understanding of human nature. His productivity continued until the day he died in 1870 at the age of fifty-eight. He was in the midst of a new book entitled *The Mystery of Edwin Drood,* writing lovely words such as these: "A brilliant morning shines in the old city. Its antiquities and ruins are surprisingly beautiful with a lusty ivy gleaming in the sun, and the rich trees waving in the balmy air" (Dexter, 1937, p. 77).

Generally an optimist, "he possessed one of the pioneer social consciences of Great Britain" (Wagenknecht, 1966, p. 105). He did not merely weep for the poor; he personally gave large sums to charity. "Dickens opened the floodgates of his sympathy for all the neglected, unloved, and misused, all the innocent and suffering victims of society, all the prisoners of injustice and pain. Their cause became his cause" (Tomlin, 1969, p. 132). In nineteenth century England there were many reasons for concern. Through his novels and a prodigious output of journalism, he worked for social reform. The horrors of prison life, pauperism, child labor, filth - all were attacked by Dickens. Gradual changes were seen in his lifetime and more rapidly after his death.

A national system of education was begun the year Dickens died. It made education free and compulsory for all. Before that, for the poor there was haphazard religious schooling and a few amateurish at-home schools. Dickens' own fitful formal education was a mirror of the times. Partly through his influence education became more competent and humane. "He believed in 'the just right' of every man, whatever his belief or however humble his degree, to aspire, and to have some means of aspiring, to be a better and wiser man" (Wagenknecht, 1966, p. 104).

His career was triumphant. He attacked cruelty and injustice with weapons of "caricature and burlesque, of melodrama and unabashed sentiment" (Tomlin, 1969, p. 63). Carlyle's noble tribute said it best: "The good, the gentle, high-spirited, ever friendly, noble Dickens, every inch of him an honest man" (in Wagenknecht, 1966, p. 211).

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PROFESSIONAL TRAINING INSTITUTE WORKSHOP

The Fourth Annual Professional Training Institute (PTI) sponsored by the National Association for Gifted Children (NAGC) is being held at Arizona State University from February 20 through 23, 1983. On hand will be university professionals from all parts of the country who focus on the issues concerned with educating gifted children. One of the benefits of having luminaries in the field here in Arizona will be the opportunity to attend a day of workshops offered by many of those attending the PTI. Among those who will be making presentations that are directed toward teachers and parents of gifted children will be Dr. Julian Stanley, Founder and Director of the Study of Mathematically Precocious Youth (SMPY) at Johns Hopkins University, Dr. John Feldheusen, President of NAGC and Director of the Purdue Institute for the Gifted, Dr. Joseph Renzulli, director of the Bureau of Educational Research at the University of Connecticut, Dr. Wendy Roedell, Consultant to the Northwest Gifted Education Center in Seattle, and many others.

For more information about these workshops, call (602) 965-4757 or write Professional Training Institute Workshop, Project for the Study of Academic Precocity (PSAP), Department of Special Education, Arizona State University, Tempe, Arizona 85287.